METROPOLITAN
TORONTO
CENTRAL
LIBRARY
Municipal Reference

THE INFORMATION ECONOMY:

A FRAMEWORK FOR AN ECONOMIC DEVELOPMENT STRATEGY

A REPORT

TO

THE COMMUNICATIONS AND INFORMATION TECHNOLOGY TEAM
OF CITY COUNCIL

BY

THE TECHNOLOGY SUB-COMMITTEE

AUGUST, 1984

AUG 0 8 1984

The Information Economy:
A Framework for an Economic Development Strategy

This Report reflects the views of three members of the Communications and Information Technology Team who formed the Technology Sub-Committee. The Report is designed to help fulfill the mandate of the Team to assist City Council in determining options for the City of Toronto in facing the enormous challenges posed by technological advance in our society.

While the Team's mandate focuses specifically on communications and information, we felt the issue should be broadened, at least at the sub-committee level, because of the effects all forms of technological change are having on industrial development. That is the context in which Council must consider future decisions.

In discussing communications and information technology, we are not talking just about discrete products and services, but systems and processes that have a direct bearing on the capacity of existing industries to modernize, compete and function efficiently. Both dimensions of the Team's explicit mandate must be given equal weight. These considerations underlie the proposals presented later in this report.

In his Jobs and Economic Development strategy report, Mayor Art Eggleton notes, "Since society overall is heading into a period where communications technology will have a profound effect on the social, economic and cultural dimensions of life, it is imperative (and economically-sound) that Toronto be at the forefront of the evolution of these technologies and the development of the software and hardware needed to make them work".

In the Communications and Technology District Report, by the Commissioner of Planning and Development, which is among the items for consideration by the Communications and Information Technology Team of City Council, the Commissioner recommends an expansion in uses permitted under the zoning by-law to accommodate information-related quaternary businesses. At the same time, the Technology Transfer Advisory Committee established by City Council notes "the serious structural problems facing the entire traditional manufacturing sector...", and makes a series of recommendations aimed at facilitating the technological upgrading of existing industry as well as measures to stimulate the creation of new firms based on information and technology.

Council's decision to establish the Communications and Information Technology Team on the recommendation of Mayor Eggleton and under the Chairmanship of Alderman Ying Hope, indicates a step beyond need identification to implementation. It is the Team's task to recommend ways of achieving the goal of making Toronto a world-class centre of communications and information technologies.

The members of the Team who formed the Sub-Committee bring different perspectives and interest to the matter. For example, at the University of Toronto, major efforts have been devoted to science and research, leading ultimately to new technology-intensive products and services. Bell Canada Enterprise, one of the world's foremost communications companies, is involved in the development, production and installation of communications networks and terminal services. Ryerson Polytechnical Institute concentrates on implementation through training people to use new technology and testing and adapting technology to the workplace.

We believe it is necessary as a first step in developing a communications strategy to analyse the overall technological opportunity for Toronto. Clearly, communications and information technology are central to the entire technology challenge.

Technology Defined

Getting words and buzzwords straight is particularly important in an area where knowledge is changing so fast. As with all fundamental shifts in economic and social activity, vocabulary generally lags behind the event itself. In the transformation from an agricultural to an industrial society, early analysts used the word harvest to describe the output of manufacturing production.

When we use the term high technology in this report, we are referring to the wide range of modern, usually scientifically

based, developments that are resulting in new products as well as transforming the way goods and services are produced and distributed. Quoting from the Communications and Technology District Report: "The high technology revolution which began slowly in the 1950's has now generated completely new computer-based information services, information processing, communications of data and information, computer-controlled design and production systems (CAD/CAM and robotics), new biotechnological, biomedical systems and a new system of educational hardware and software. These developments will force changes in all educational, communication, and production activities in the '80's."

High technology, and particularly communications and information technology, are as inherent in the process of production as they are distinct products themselves. It is increasingly difficult to separate firms into those producing high technology products and services and those using them. Information and the production and distribution of that information are as important to such traditional industries as automobile and garment manufacturing as they are to computer manufacturing plants. Computers and robots are being used to produce computers and robots as well as pots, pans and buttons.

To give concrete examples of all the developments listed above and to describe how they work is beyond the scope of this report. We refer the reader to Appendix B of the Communications and

Technology District Report where three pages are devoted to just listing the products and systems.

Instead, we will highlight a few of the technological developments that are having a critical impact. We start with technological changes being made in communications, the main focus of the Team.

Advances in the telephone are probably most easily understood. There are now hundreds of different types of telephones on the market. We are all familiar with one piece phones and cordless phones. We will soon be equally familiar with screen phones. The screens are being used to reproduce stored voice messages that are converted to print, to reproduce data messages transmitted directly by computers and to display simultaneously on several phones information needed for teleconferencing, itself a relatively new communications development. Automatic dialing and trunk queuing of calls are two other recent developments. While most of these advances are now being used in business, the home market will soon be open to many of them as well.

Direct satellite broadcasting is also familiar to most of us through television and international phone calls. It is also being used to print different editions of the Globe and Mail in different cities in Canada as well as for business communications around the world. A recent development in this field is time division multiple access which increases many times the amount of through traffic a particular communications band can carry. This

breakthrough also allows "high-bit rate" transmission which greatly improves the quality of teleconferencing, facsimile reproduction and electronic mail.

Advances in data processing are occurring both in the fields of hardware and software. Hardware advances have been mainly in improving the memory capacity, keyboard and screen design and mainframe hook-ups for micro computers at desk top work stations. Software development is a leading growth sector in the information revolution. Programs that can do more things, more efficiently and with increased user friendliness are being developed constantly. Experts are working on software systems that will be compatible with all computers.

Integrated voice and data communications systems are the biggest and most important communications advance in recent years. Because voice and video, and data transmissions travel by different types of signals, it has been necessary to develop a means of converting to a common signal in order to permit simultaneous transmission and to allow the hardware of one mode of transmission to receive the information from another. The most common device that accomplishes this task is called a modem.

Systems linking micro computers and screened telephones through modems and inexpensive high speed channels with other micro computers and telephones, filing systems, data banks, printers and mainframe computers are known as private business exchanges

(PBX's) or local area networks (LAN's). They can be installed within buildings, cities, countries, and through satellites around the world. The next step is the linking of various PBX's and LAN's. This technology is the same technology that is creating the office of the future, as it is coming to be known. In fact, the office of the future is itself a local area network.

Other developments are equally dramatic. Computer integrated manufacturing, for instance, is transforming the production process. During the 1970's, robots were used primarily for repetitive, easily organized tasks such as lifting, turning, welding and drilling. Today, computer programmed robots are working with super high speed lathes to produce complicated tools and equipment.

Computer aided manufacturing (CAM) has affected even the most traditional manufacturing sectors. Laser cutters directed by relatively simple computer programs can cut substantially more material for clothing while saving five to ten percent in material wastage. A simple change in the program can widen lapels, shorten hemlines or make fundamental changes in garment style.

We are all familiar with the changes biotechnology is making in the field of human fertility. Parallel to these are changes in the characteristics of plants. Drought-resistant grains offer opportunities for cultivating substantial land areas now considered arid. Disease resistance, through molecular

engineering, is also being developed. Much of this research is now being conducted at universities and medical institutions in Toronto. As the Allelix plant in Mississauga demonstrates, new biotechnology businesses are also developing.

These are just a few of the advances in high technology taking place. No one is capable of detailed understanding of them all. Nor are the experts in any one field certain of where the next discovery or refinement will take them.

The pace of change in all fields including the ones described above is a fraction of developments in both hardware and software. The development of the microchip and the products that have resulted such as the micro computer and programable robots have been the driving force in the past. Today, however, software development, that is, the programs that run the hardware, are an equal, if not greater, force behind technology development. In fact, the international competition to develop the fifth generation or intelligent computer is basically an exercise in advanced software development.

In our view, Toronto is well positioned to benefit from the revolution. Exemplifying this opportunity is the proposed CBC English language Broadcast Centre which will house one of the most modern broadcast facilities in the world. The potential spinoffs and linkages generated likely will be important.

Also indicative of the emerging opportunity is the electronically integrated office and the broader local area networks. As the centre of Canada's information activities and with the single largest concentration of head office operations in the country; Toronto is in a unique situation.

Social and Economic Implications

Advances in the field of information and communications technology are having significant social and economic impacts on people and industries, many of which are not fully perceived or understood. Certainly there is a question of the impact on our human resources in the workplace and the need for training, retraining and human resource development in preparing people for jobs of the future.

Chase Econometrics in its 1981 report on "The Impact of Microelectronics on Employment and Economic Growth in the 1980's" conclude that while there will be significant job dislocations in the short run, the long term effect will be a net addition to employment. In its 1983 report to the Canada Tomorrow Conference, Informetrica forecasts a job loss due to technology of 400,000 to the year 2,000, but points out that over the same period compensating forces would restore all but 30,000 to 60,000 jobs. The most recent study by Arther Younger cited by IDEA Corporation in its May, 1984 report "Ideas on Innovation" also forecasts short term labour displacement. But by 1991 under the most optimistic

scenario and by 2,000 under the most pessimistic, technology is forecast to generate a net increase in employment.

It is evident, therefore, that forces are in play that must be harnessed and directed to minimize worker dislocation and maximize the opportunities for skill preparation. The Province of Ontario has recently formed the Task Force on Technology and Employment headed by Mr. Robert White, Canadian Director of the United Auto Workers and Mr. William Boggs, former Chief Executive Officer of Canada Systems Group and former Chairman of the Canadian Manufacturers Association. Their job is to investigate the impact of technology on employment. In becoming aware of the specifics of the assignment, the City of Toronto must contribute to it and take part as much as possible in terms of the possible effects on the work place in this City.

Technological change is affecting traditional manufacturing as well. While it provides opportunities for firms to modernize and improve their productivity and create jobs, it also threatens the competitive position of some sectors which need substantial amounts of scarce new capital just to keep up.

The stakes in directing technological change are enormous. Even though all of the forces and influences are neither predictable nor clearly understood, Toronto must take an active role in developing a perspective and strategy to direct these influences in a way that will benefit the economic and employment prospects

of this community. The alternative is a passive strategy or no strategy at all locally. That is not acceptable in the current climate of change and economic uncertainty.

Although the social and economic implications of the revolution are not clearly understood, to abandon the pursuit of a more effective and productive economy would result in Canada's continuing to lag in our competitive position internationally. This, in turn, would increase reliance on our depletable resource base. A major accomplishment of Canada in the twentieth century must be a successful drive to diversify the economy. And Toronto ... as a major cosmopolitan City ... must be part of it.

The Technological Growth Opportunity

The Communications and Information Technology District Report estimates potential new employment in technology-related firms in Toronto at 7,500 to 1990. City staff have reviewed this estimate and consulted authorities in the field. The consensus is that given the difficulty of forecasting such a quickly evolving sector, it is reasonable to expect employment growth in this range.

The City already has a substantial high-technology base upon which to develop. There are over 800 firms, employing in excess of 18,000 people, ranging from the software and systems development firm I. P. Sharp with offices around the world, to Microdesign, experts in the application of micro computers in industry, to

Toronto Research Laboratories, specialists in industrial chemical analysis, research and development.

The above figures, based on the Metropolitan Toronto Employment Survey, probably underestimate the technology sector. Some high technology firms have been missed in assembling the numbers because the activity codes used for the survey do not always specify the high technology character of some operations. Consulting engineers involved in the design and development of high technology products and services are one example.

The communications and information sector is by far the largest. While printing and publishing represents the majority of firms, there is a growing number involved in designing, developing and implementing computer software and systems. Bell Canada, represented on this sub-committee, is the largest employer in this category. However, the sector is generally characterized by small and medium sized firms such as Teleride, specialists in computerized public transit communications systems, Network Design and Analysis Corporation, designers of data and voice networks, and Synergex, a firm involved in a wide range of communications activities including audio-visual programs and training.

The growth prospects in the high technology sector are significant. With 5.5 million square meters (59 million square feet) of office space in the core area alone, the growth in office systems is potentially large. The Communications and Information

Technology District Report is correct in identifying the office of the future as a prime growth sector.

A study released while this report was being prepared has identified for the first time the shift that information activities has caused in the Canadian economy. The study, done by the Canada Consulting Group for Ontario's Ministry of Transportation and Communications, shows that information products and services accounted for 47 percent of Gross Domestic Product in 1981 compared to 35 percent in 1971. Defining computer manufacturing as part of the primary information economy and market research and software development, as part of the secondary information economy, the report notes that 2.6 million Canadians and more than one million Ontario residents are employed in information industries.

In terms of growth, the total information economy grew by almost 70 percent between 1971 and 1982, twice as fast as the total economy. Secondary information industries, in turn, grew faster than primary ones. Communications and services to business management are the fastest growing sectors of the primary information economy.

As for the future, the report states, "the network information services - the combination of hardware, software, communications, and information services - will make possible a whole new array of economic activities". It also points out that information

capabilities increasingly define the competitive edge of business. In manufacturing, cost and quality competition will often be based on advanced information technology. In commerce, the merging technologies of word and data processing and software development "will make productivity gains associated with the 'office of the future' realizable in the near term".

It is important to note that new small firms, of which high technology firms are a substantial portion, are the prime source of employment growth in the Canadian economy. In 1983, the Canadian Federation of Independent Business released a study which showed the largest gains in employment were provided by firms with 50 or less employees. Although large firms, those with over 500 employees, contributed almost 30% of all new jobs in the 1975-80 period, many of those jobs were lost in the 1980-82 recession. The CFIB study projects that by 1990 small and medium sized enterprises will generate 6.2 million jobs in Canada, versus only 2.4 million in the large corporate sector and 2.7 million jobs in the public sector.

As noted earlier, upgrading of existing firms through new technology is critical to our competitive position as a country. In many cases, new high technology products and processes are designed specifically to improve existing operations.

Major efforts are being devoted to upgrade existing manufacturing. The Province of Ontario's five BILD Technology Centres are

specifically designed to assist existing industry to modernize their production systems. The Federal government, through the National Research Council, provides support research and development within industry. Programs like the Technical Information Service and the Industrial Research Assistance Program provide information and financial aid for individual companies. For firms in less technology-intensive industries such as textiles, footwear and clothing, the Canadian Industrial Renewal Board has a mandate to assist firms and workers in adjusting to changing economic and technical conditions.

The Challenge

New firm creation and existing firm upgrading are happening, but they are not happening at a fast enough rate. Canada continues to lose its competitive advantage. Based on recent studies by the European Management Forum and the Organization for Economic Co-operation and Development (OECD), Canada's competitive position slumped badly during the recession and the economy is failing to provide enough new jobs, especially for young people. Ranked by industrial competitiveness, Canada emerges in 11th place, down from 6th place in 1982. The OECD's "Economic Outlook" predicts unemployment averaging 11% for the remainder of 1984 and youth unemployment is predicted to be above 19%.

While the private sector is proceeding at a rapid pace in the development and adoption of new technology, in many cases its

decisions are not always beneficial to the City. The technology that has permitted head offices to physically separate much of their everyday office functions has provided firms with a variety of location choices. The City is only one of many municipalities in competition for these operations which in many cases involve relatively labour-intensive data processing. The Royal Bank data processing plant next to the CN Tower is a clear example of the City's opportunity in this sector.

Large firms at the leading edge of new technology such as Northern Telecom, Motorola, Syntex, American Express, IBM, and Contral Data have chosen suburban locations for their major production and research operation. However, the opportunity exists to attract similar firms to Toronto.

New small companies generally prefer to locate outside the City. Markham alone has become home to such new high tech firms as Lanpar, a manufacturer and distributor of computers, Multilin, a manufacturer of instruments, and Geac, another computer manufacturer.

Nor is Toronto currently able to accommodate new incubating firms that are in the process of being created both within and outside our academic institutions. At the University of Toronto, as an example, a chemistry professor, who continued to need access to the University's laboratories, was unable to find suitable

accommodation for his start-up manufacturing plant in Toronto. He is renting space in an industrial multiple building in Markham.

Some reasons for Toronto's situation are obvious. High technology firms, in making their location decision, are influenced by the same factors as more traditional firms. The City is extremely short of good competitively-priced land. Industrial property taxes in the City are also high. In addition, the City is perceived by many as not welcoming new investment and development.

At the same time, Toronto has some distinct advantages. It is at the centre of Canada's largest consumer and commercial markets. Within that market area, it has concentrated in its core the country's largest market for the office of the future. It has available a broad range of experts for staffing and for consulting services. The transportation networks and particularly public transit are very good. The educational institutions are excellent sources of people and expertise and the City offers a wide range of good housing and amenities. However, these assets obviously are not enough to balance the economic liabilities.

The City's Role

If Toronto hopes to maximize its benefit from the technological revolution it should work to reduce its liabilities and increase its assets. Some positive steps are already being taken.

The City is attempting to co-ordinate business, labour, academe and other Toronto institutions in support of a technology initiative. The members of this sub-committee represent industry and the universities. The Technology Transfer Committee was composed of representatives from industry, labour and academe. The large and growing role that the health community is playing in Toronto and in the field of biotechnology in particular suggests that opportunities exist for Toronto to broaden its institutional liaison.

Toronto is in the process of reviewing its by-laws and regulations insofar as they may constrain new technology development. The Communications and Technology District report recommends an expansion of uses in two particular planning areas. We concur with this recommendation and suggest that the Department of Planning and Development continue its review of the appropriate definition of industry for the whole City. One area that could be a serious liability is the exclusion of the fastest growing segment of high technology, software design, development and installation - a major part of the secondary information economy as defined by Canada Consulting.

The type of building permitted in industrial areas also warrants consideration. It is not clear whether current industrial zoning would permit the type of high technology building being constructed today. As an example, one of the most modern high technology plants in the Toronto area is the one designed and

built by Inducon Associates for the Motorola Company in Brampton. Known as the Motorola Information Systems Building, it is designed to manufacture and assemble a variety of high technology products for local area networks. As with many similar buildings such as Xerox, IBM and Control Data, the corporate headquarters is part of the project.

It is worth noting the integrated nature of the building comprising office and plant operations split almost 50-50 including the firm's corporate head office function. Simply by way of example, it appears that this building could not be built in many industrially-zoned areas in Toronto under present zoning.

Thirdly, we encourage the City to continue its initiative to access senior government programs in support of technology development and upgrading. While various programs and assistance are available, the Ontario Government must distribute those incentives across the Province and Ottawa must consider the entire country. Municipalities throughout Canada and Ontario are agressively vying for those programs. Toronto must be equally active.

To determine what additional steps Toronto should take, we need more information, reflected in the following questions:

<u>What are the prime factors affecting decisions to locate high technology firms?</u>

We have mentioned high land prices and taxes as two possible City liabilities. But exactly what new technology firms are willing to pay is not clear. The importance of labour supply, market size, transportation, exposure and a variety of other factors needs to be understood as a first step in developing a City strategy. Less quantifiable location criteria such as the importance of technical and academic resources and the perceived attitude of the City regarding development should also be determined. Information regarding zoning and regulations would also benefit the work already underway.

The best source of this information are firms that have recently made a location decision. We recommend therefore, that City staff undertake an extensive round of interviews with large, medium and small high technology firms that have made a plant location decision within the past five years. Given the mandate of this committee, it is advisable that the sample of firms be weighted in favour of those involved in communications and information technology.

Are there parts of the City particularly well suited for a technology growth park?

Without prejudging the results of the survey recommended above, it is clear that high technology firms have a strong tendency to congregate in particular areas. The more modern technology parks or districts are incorporating more amenities and services than

traditional industrial parks. Recreation and fitness facilities as well as daycare for staff are becoming common features. Training and retraining facilities are also being incorporated into some parks as are more traditional commercial uses such as banks and restaurants.

The Communications and Technology District Report identifies a portion of King-Spadina East as one location where communications and technology-related firms should be encouraged. This is certainly one opportune location. But at this preliminary stage, we believe that City staff should also evaluate other parts of Toronto as potential locations for an industrial park or parks geared to high technology products and processes. Two that come readily to mind are the East Bayfront and the proposed Port Industrial Park at Leslie Street. There may be an opportunity to create more than one growth park.

What can Toronto do to nurture new start-up firms?

The Technology Transfer Advisory Committee has recommended that the City actively participate in a facility designed to foster new firm development. Woods Gordon, in their report on the Economic Development Corporation of the City of Toronto, identify an incubator facility as a likely early project for the Corporation. We too recommend that the City proceed to develop a workable incubator project for Toronto.

More than 20 incubator facilities have been established in the United States and we know of three in Canada. The purpose of these facilities is to provide support services and space at affordable cost to small start-up firms. The goal is to nurture and then wean these firms away from the support systems in, at the most, three to four years by increasing costs to market levels. Some of the U.S. examples have had as high as 85 percent success rates.

Incubators, existing and proposed, differ considerably. In some cases, all that is provided is space and services such as telephone, photocopying and micro computers. In others, a substantial business support network is provided to assist firms with marketing, management and business organization. Still others provide a pool of financing either as start-up funding or venture capital investment.

In all cases the local municipality has taken an active leadership role. The benefits a community derives in job generation and economic benefit are substantial. Still, the direct cost-benefits to the taxpayer must be assessed given the prospect of some degree of public subsidization necessarily involved in such a venture. This investment in public dollars should be seen, however, as an investment with a risk characteristic understood and then minimized.

Our assessment of current conditions indicates interest in incubators is already substantial. Both Ryerson and the University of Toronto, represented on this committee, have been considering an incubator facility. The Government of Ontario through the Ministry of Industry and Trade and the Ministry of Treasury and Economics is actively considering an incubator strategy for Ontario. Other individuals and groups in the private sector have been working on incubator concepts.

We recommend that the City proceed to determine what incubator model is most appropriate for Toronto. This will require identifying the market opportunity, facility requirements, location, physical and advisory service needs; preparing a business plan that specifies costs, revenues and management organization; and putting together a funding program based on joint private, public and institutional participation. Since incubators are a new concept and the elements needed for their success are complex, it is likely that advice from professionals who have built incubators will be needed.

There may be other ways for the City to assist new startup firms. As we have discussed earlier, software development is currently the main driving force behind new advances in technology and its application to industry. A large number of small independent firms are being formed that develop software exclusively. The City of Toronto is already home to a number of these firms and

given the amount of institutional support and the market size of the City, the growth opportunity is substantial.

To help solidify this opportunity, the City should determine whether there is a need for a software resource program. The purpose of the program would be to assist software developers to overcome bottlenecks in software development, to test software, and to act as an intermediary between software developers and software users. This latter role could be particularly important in helping modernize existing firms in the City where specialized computer programs may be needed.

To determine if there is a need for such a program and, if there is, how it would be put in place, the City of Toronto should interview a range of software development firms. Discussion of the concept with the Ontario Ministry of Industry and Trade and other relevant organizations would also be required.

Conclusion

The means for Toronto to carry out a successful technology strategy are being put in place. The formation of the Economic Development Corporation of Toronto offers a potential advantage as a vehicle for the City's involvement in such an enterprise.

City Council recently approved the formation of an Economic Development Committee to be chaired by Mayor Eggleton. We recommend that this new committee establish as an early priority

the development of a technology strategy for Toronto. A clear expression of political will and determination will be important to the success of such a program.

One missing element that is likely to be needed is an information program geared to the high technology sector generally and the communications and information industry specifically. Discussions with our colleagues have shown that they are unaware of Toronto's interest in attracting their type of firms. This needs to be corrected.

In addition, the success of both a technology growth park and an incubator facility will depend heavily on marketing. When final decisions on these projects are made, the City should develop an appropriate program to inform decision makers of its actions. In this we see the need for co-ordination with Metropolitan Toronto Council if approval is given there to the concept of an organization for economic development and the role of marketing the area generally for industrial development purposes.

We are aware that the term "high technology" is over-used and lacks the precision we want. We have attempted earlier to bring some clarification to the terminology problem. Here we would like to place the City's technology-based opportunity in perspective.

Even if the strategy were 100 percent successful and the City were able to capture more than 7,500 new high technology jobs by 1990, it is unlikely to match the jobs lost as firms close or leave the

City. Nor will it solve the serious problems of youth unemployment or worker redundancy. Nor will it contribute significantly to job creation for the unskilled and immigrant workers who make up a significant portion of Toronto's labour force. Other measures will be needed to confront these issues and thus the value of the comprehensive strategy for economic development now before Council as a result of Mayor Eggleton's initiative.

But high technology does provide an opportunity to create a substantial number of new jobs that could provide a base for even more job creation in the future. It will contribute significantly to the tax base. In some cases, it will lead to the recycling and upgrading of existing industrial buildings and possibly districts.

Recommendations:

1. That the Council and Administration of the City of Toronto should lead in the development of programs aimed at promoting growth in technology-intensive activities in Toronto. As part of its role, the City should continue with projects already under way, namely:

    - continue to co-ordinate the public and private sectors, institutions, labour and other relevant organizations behind a technology growth strategy;

- continue the review of the entire Zoning By-law to assure it accommodates technology-related industry;
- continue its efforts to access senior government programs in support of technology-based development.

2. That the City of Toronto undertake an interview survey covering all types and sizes of technology-related firms to determine the criteria affecting their location decision.

3. That the City of Toronto evaluate King-Spadina East, the East Bayfront and the proposed Port Industrial Park and other appropriate locations if they exist, as locations for a technology growth park.

4. That the City of Toronto hire experienced consultants to develop an incubator model that is appropriate for Toronto.

5. That the City of Toronto carry out an interview survey of software firms, the Province and other relevant organizations to determine if a need exists for a software resource program.

Dr. David Strangway
President
University of Toronto

Dr. Brian Segal
President
Ryerson Polytechnical Institute

Mr. Daniel Braniff
General Manager (Metro Toronto)
Bell Canada

CITY CLERK'S DEPT.
NO ANS
REFER FILE

AUG 9 9 13 AM 84

August 7, 1984

83.

To: City of Toronto Executive Committee

Subject: Report of Communications and Information Technology Team

Origin: Alderman Ying Hope, Chairman, Communications and Information Technology Team (c7lexec84079:288)

Background:

On November 18, 1983, Mayor Egglet.. .ecommended that City Council establish the Communications and Information Technology Team to investigate the growth opportunity for Toronto in the rapidly expanding information economy. At its January 9, 1984 meeting, City Council approved formation of the Team and requested a report on its objectives, staff requirement and timing. On January 25, 1984, Council adopted a report which stated the purpose of the Team was, "to make an assessment of the communications and information industry, the trends within this industry, its future within the City and the current and potential impacts on investment and employment". In addition, Council referred the report of the Commissioner of Planning and Development, King-Spadina East Redevelopment Strategy, to our Team for consideration.

The Team was composed of Mr. Wally Majesky and Mr. Jim Turk representing the Metropolitan Toronto Labour Council, Dr. David Strangway, President of the University of Toronto, Dr. Brian Segal, President of Ryerson Polytechnical Institute, and Dr. P. E. Pashler of Canadian General Electric. Alderman Jack Layton and myself were Council representatives on the team.

While the Team has continued to carry out the mandate of Council, two changes have been necessary. First, the composition of the Team has changed. Dr. Pashler resigned from the Team due to illness. Daniel Braniff, General Manager (Metro Toronto) of Bell Canada, replaced Dr. Pashler. Also, the Labour Council of Metropolitan Toronto representatives withdrew on May 2, 1984 on the grounds that the Team's mandate is, "mostly redundant and is irrelevant to current development decisions being made in regard to the King-Spadina area". In my letter of June 1, 1984 to the Labour Council, regretting their decision, I pointed out that while King-Spadina East is likely a focus, the goal of the Team is to identify what the communications and information growth opportunity is for Toronto as a whole.

Secondly, the Team identified the need to provide a broader framework for its deliberations. As the attached report details, the greatest technological growth opportunity for Toronto is in the communications and information sectors. However, the challenges and opportunities in these sectors are not unique. Technological change is affecting all segments of the economy including mature traditional manufacturing. Strategies designed

AUG 0 8 1984

to foster the development and application of technology as a whole are certain to capture communications and information activities. Strategies focused exclusively on communications and information may miss other important opportunities.

Consequently, the focus of the Team was broadened and a technology sub-committee composed of Dr. David Strangway, Dr. Brian Segal, and Mr. Daniel Braniff, was formed. The attached report entitled The Information Economy is signed by these three experts in the field, and I am pleased to transmit it to Council for further consideration.

The Information Economy Report

One of the major contributions of the sub-committee's report is in identifying the complexities and the unknowns in discussions about high technology. The term high technology itself, the report points out, is imprecise and difficult to define. It notes that, "getting words and buzzwords straight is particularly important in an area where knowledge is changing so fast", and states that high technology, and particularly communications and information technology, are as inherent in the process of production as they are distinct products themselves. A series of examples of how technology is affecting all forms of economic activity is presented.

The report states that technology is having a substantial impact on labour and the economy. However, it is unknown what the long term implications of that impact are. Three studies are cited which conclude that, in the short run, labour displacement will likely be substantial but before or by the turn of the century, net or compensating gains will be made.

Also unknown is how fast and in what direction technological change will proceed. The report notes that the field is too large and complex for any individual to master. Even specialists in any one field have difficulty forecasting where the next development will occur. One fact that we can be confident of is that software development has equalled and may have surpassed hardware as the driving force behind growth.

Given these problems, however, the authors of the report conclude that the pursuit of a more effective and productive economy through technological advance cannot be abandoned. To do so would mean Canada's continuing to lag in its competitive position internationally, and would force the country to rely more heavily on our depletable resource base.

The report proceeds to identify the growth opportunity for the City of Toronto. Again, it is difficult to put precise numbers on growth due to the speed and complexity of change but the authors conclude that Toronto's prospects are substantial for technology in general and communications and information technology in particular. Citing a recent study done for the Provincial Ministry of Communications and Transportation as well as the forecast provided in the Communications and Technology District Report, the sub-committee identifies a substantial opportunity both in the development, production and distribution of new technology and the application of new technology to traditional manufacturing. With reference to the latter, the Technology sub-committee is in agreement with the Technology Transfer Advisory Committee Report. The authors also note a definite need for City leadership to maximize the benefits from technological change.

The sub-committee report concludes with a series of specific recommendations that divide into two groups. The first three recommendations reinforce actions already underway. In addition to urging the City to continue to tap the resources of business, labour and academe, the sub-committee recommends Toronto continue its review of the zoning by-law to assure it accommodates technology-related industry. The City is also encouraged to continue in its efforts to access senior government programs in support of technology-based development.

The second set of recommendations identify new initiatives that will provide Council with the information needed to proceed with a growth strategy. In order for the City to mount a program to attract existing high technology firms, it is necessary that the factors affecting location decisions of such firms be identified. To this end, the committee recommends that the Commissioner of Planning and Development undertake an extensive survey of technology-intensive firms to identify what factors affect their location decisions.

Equally important, the City must decide where it would prefer to locate high technology firms. King-Spadina East has been identified as one location but the Port Industrial Park and the East Bayfront also offer opportunities. An evaluation of alternative locations is needed.

The Information Economy report also recommends that the City determine if there is a need for a software resource program to assist the growth and development of software firms. This too will require interviewing firms in this sector.

The report concludes by noting that the City is developing the organizational framework needed to mount a growth strategy. The City of Toronto Economic Development Corporation will likely play

a key role in both a technology growth park and an incubator facility. The new Economic Development Committee of Council will also provide a good opportunity to develop and implement a technology strategy for Toronto.

The King-Spadina East Redevelopment Strategy Report

With regard to the King-Spadina East Redevelopment Strategy report, the Communications and Information Technology Team endorses, in principle, the concept of a Communications and Technology District and wishes to move certain of the recommendations forward for immediate consideration. The ultimate implementation of the concept must depend, of course, on a favourable evaluation of the King-Spadina area in relation to alternative sites.

Whereas the King-Spadina report calls for a marketing and promotion strategy report, the Information Economy report recommends that a market opportunity study be undertaken first. This will facilitate the evaluation of alternative locations for a technology growth park and would provide Council with more information for decisions regarding a technology growth district or park.

In addition, recommendation four of the King-Spadina report parallels the Communications and Information Technology Team's support for an incubator centre. Both call for the Commissioner of Planning and Development to prepare terms of reference and a budget for an incubator centre proposal call. As well, both reports agree that the Commissioner of Planning and Development should proceed with a review of the zoning by-law to assure industry definitions are not a constraint to growth of technology-related firms.

Conclusion

The Information Economy report which I am now transmitting to Council provides the focus needed for City Council to proceed with developing a technology strategy for Toronto. While it does not answer all the questions asked of the Communications and Information Technology Team, it does recommend ways of finding answers to many questions. It also points out where answers cannot be found such as attempting to measure what the technological growth opportunity is. It also recommends the City actively work with other governments and organizations to find answers for the difficult questions regarding technology's impact on labour and industry as a whole.

The report also makes it clear that new technology cannot be discussed independently of the application of technology to more traditional economic activities. In this regard, the report is closely allied with that of the Technology Transfer Advisory Committee. In developing a program for Toronto the two reports must be considered simultaneously.

With regard to the King-Spadina East Redevelopment Strategy, it is recognized that this area is possibly well suited for technology-related development. But it is presently recommended that this district should be evaluated in relation to other parts of the City that might accommodate a concentration of technology-intensive firms. Recommendations are put forward with this consideration in mind.

The following recommendations vary slightly from those in both the Information Economy and the King-Spadina East Redevelopment Strategy reports. For instance, in the former, where appropriate, I have replaced City of Toronto with Commissioner of Planning and Development since that is the Department that will be doing the work.

With regard to the evaluation of King-Spadina East, the East Bayfront and the proposed Port Industrial Park, I have recommended that the Toronto Harbour Commission be involved since they have substantial holdings in the latter two areas. In order to do this comparison and to maintain consistency between the two studies, I am suggesting, as well, that the recommendation in the King-Spadina East Redevelopment Strategy report to proceed with a marketing program be amended to become a market opportunity study.

I have also included the recommendation in the King-Spadina East Redevelopment Strategy report regarding the zoning review. Even though this would be part of the broader zoning by-law review proposed in the Information Economy report, it will assist in the comparison of the three alternative locations for a growth park. In addition, if King-Spadina East is identified as the prime location for a technology growth district, it is necessary that the City be prepared to act quickly.

Recommendations:

1. That the following recommendations from the Information Economy report be endorsed by the Executive Committee and transmitted to the Economic Development Committee for appropriate further action:

    a) That the Council and Administration of the City of Toronto should lead in the development of programs aimed at promoting growth in technology-intensive activities in

Toronto. As part of its role, the City should continue with projects already underway, namely:

- continue to co-ordinate the public and private sectors, institutions, labour and other relevant organizations behind a technology growth strategy
- continue the review of the entire zoning by-law to assure it accommodates technology-related industry
- continue its efforts to access senior government programs in support of technology-based development

b) That the Commissioner of Planning and Development survey technology-related firms to determine the criteria affecting their location decisions

c) That the Commissioner of Planning and Development, in consultation with the Toronto Harbour Commission, evaluate the East Bayfront and the proposed Port Industrial Park as locations for a technology growth park and that these two areas be evaluated relative to King-Spadina East

d) That the Commissioner of Planning and Development write terms of reference and establish a budget for an incubator facility study based on the concept described in the Information Economy report; and

e) That the Commissioner of Planning and Development carry out an interview survey of software firms, the Province and other relevant organizations to determine if a need exists for a software resource program.

2. That the following recommendations based on the King-Spadina East Redevelopment Strategy report be endorsed by the Executive Committee and transmitted to the Economic Development Committee for appropriate further action:

a) That the Commissioner of Planning and Development be requested to prepare terms of reference and a budget for a market opportunity study for King-Spadina East

b) That the Commissioner of Planning and Development proceed with a review of uses permitted in Special Industrial-Commercial Areas in King-Spadina East.

Respectfully submitted,

Ying Hope

Alderman Ying Hope
Chairman
Communications and Information Technology Team